FIG. 1

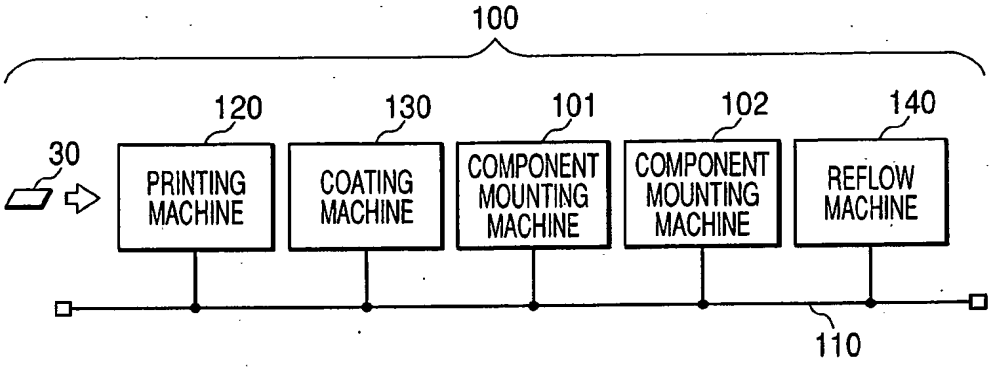

100
120
130
101
102
140
30
PRINTING MACHINE
COATING MACHINE
COMPONENT MOUNTING MACHINE
COMPONENT MOUNTING MACHINE
REFLOW MACHINE
110

FIG. 2

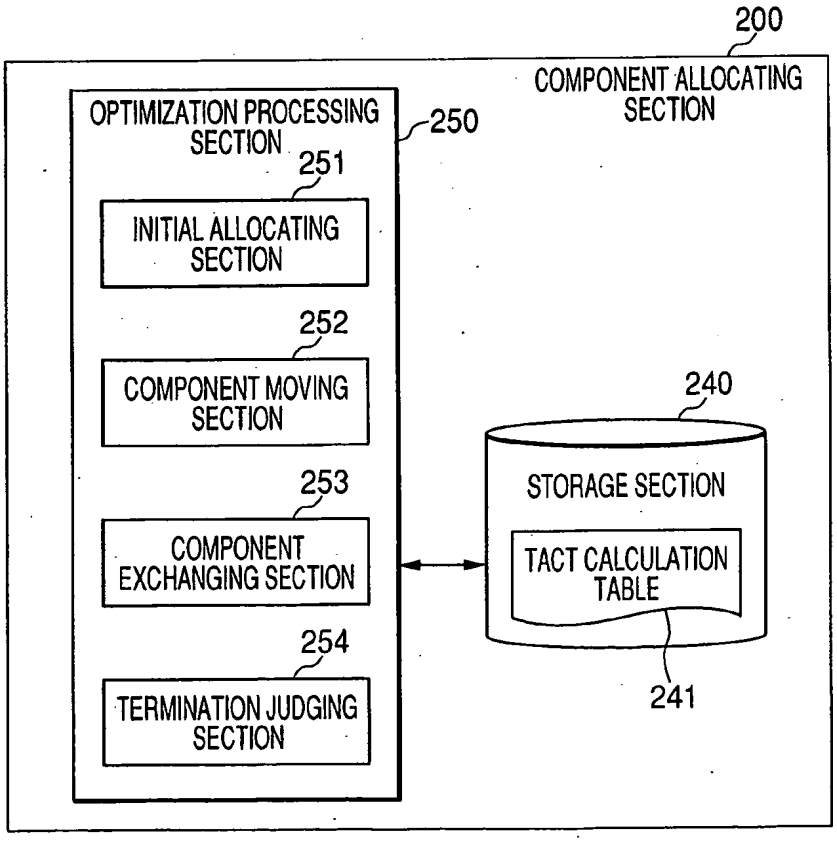

200
COMPONENT ALLOCATING SECTION
OPTIMIZATION PROCESSING SECTION
250
251
INITIAL ALLOCATING SECTION
252
COMPONENT MOVING SECTION
253
COMPONENT EXCHANGING SECTION
254
TERMINATION JUDGING SECTION
240
STORAGE SECTION
TACT CALCULATION TABLE
241

FIG. 3

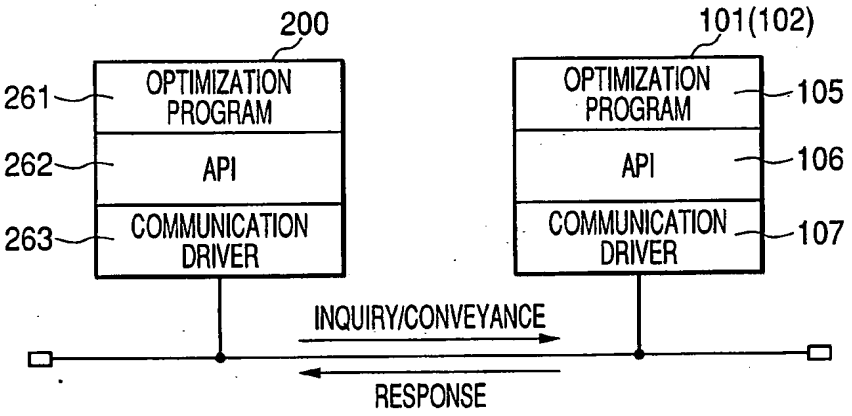
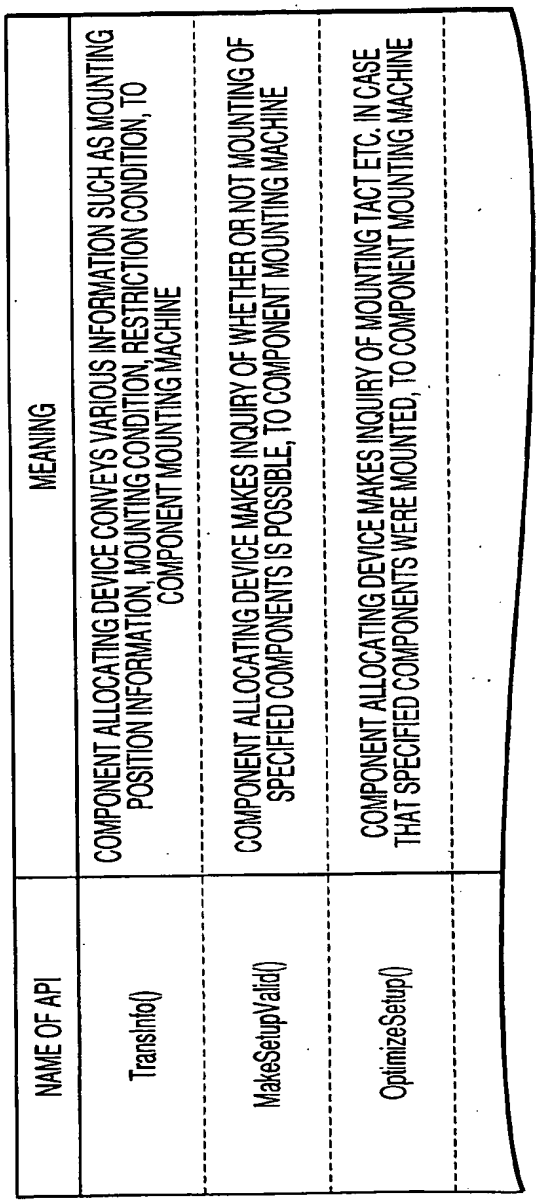

200
101(102)
261
OPTIMIZATION PROGRAM
262
API
263
COMMUNICATION DRIVER
OPTIMIZATION PROGRAM
105
API
106
COMMUNICATION DRIVER
107
INQUIRY/CONVEYANCE
RESPONSE

FIG. 4



NAME OF API	MEANING
TransInfo()	COMPONENT ALLOCATING DEVICE CONVEYS VARIOUS INFORMATION SUCH AS MOUNTING POSITION INFORMATION, MOUNTING CONDITION, RESTRICTION CONDITION, TO COMPONENT MOUNTING MACHINE
MakeSetupValid()	COMPONENT ALLOCATING DEVICE MAKES INQUIRY OF WHETHER OR NOT MOUNTING OF SPECIFIED COMPONENTS IS POSSIBLE, TO COMPONENT MOUNTING MACHINE
OptimizeSetup()	COMPONENT ALLOCATING DEVICE MAKES INQUIRY OF MOUNTING TACT ETC. IN CASE THAT SPECIFIED COMPONENTS WERE MOUNTED, TO COMPONENT MOUNTING MACHINE

FIG. 5

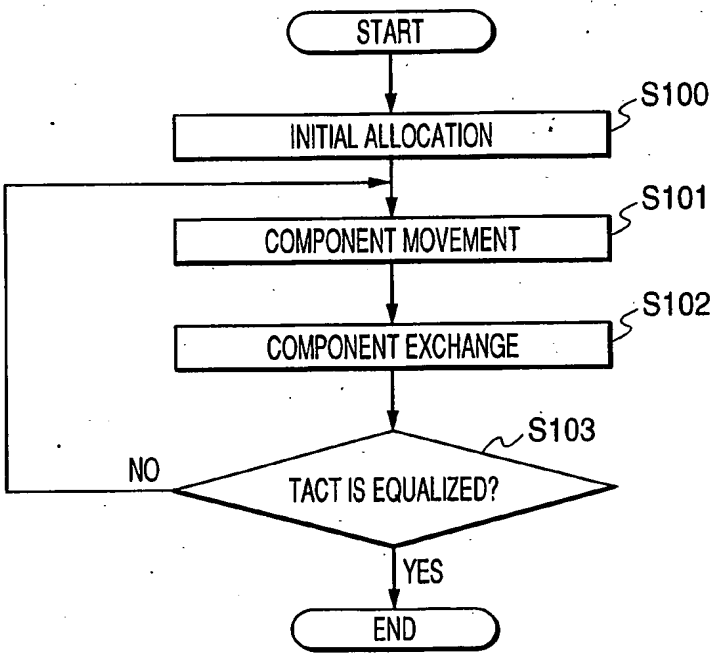

START
INITIAL ALLOCATION
S100
COMPONENT MOVEMENT
S101
COMPONENT EXCHANGE
S102
TACT IS EQUALIZED?
S103
NO
YES
END

FIG. 6

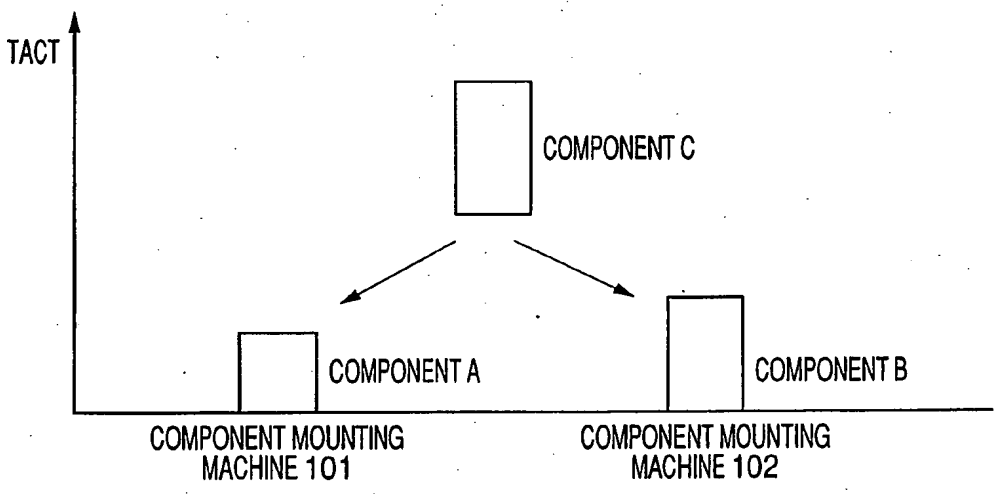

TACT
COMPONENT C
COMPONENT A
COMPONENT B
COMPONENT MOUNTING MACHINE 101
COMPONENT MOUNTING MACHINE 102

FIG. 7

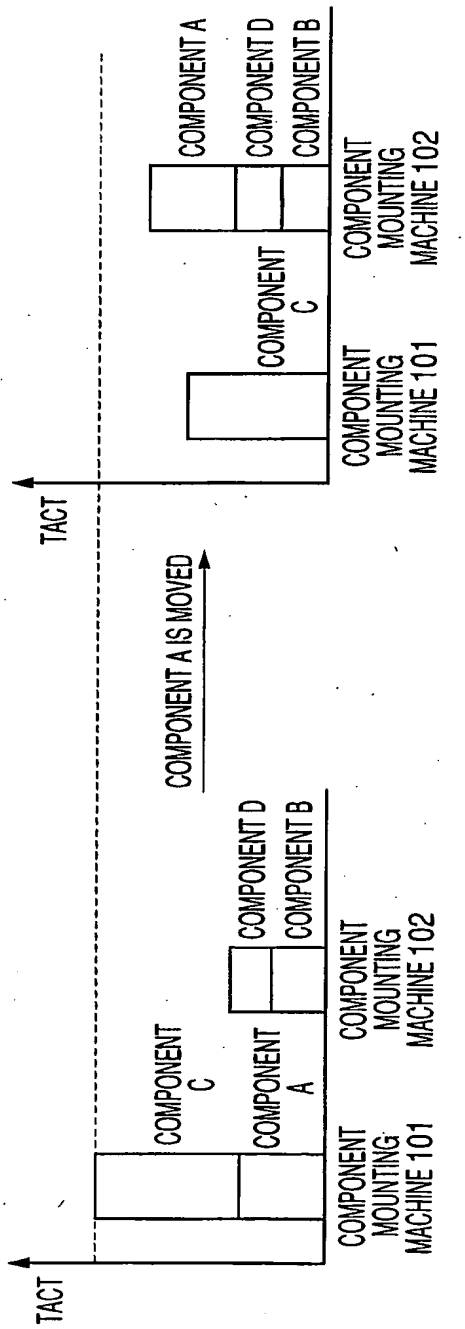

TACT
COMPONENT MOUNTING MACHINE 101
COMPONENT C
COMPONENT A
COMPONENT MOUNTING MACHINE 102
COMPONENT D
COMPONENT B
COMPONENT A IS MOVED
TACT
COMPONENT MOUNTING MACHINE 101
COMPONENT C
COMPONENT MOUNTING MACHINE 102
COMPONENT A
COMPONENT D
COMPONENT B

FIG. 8

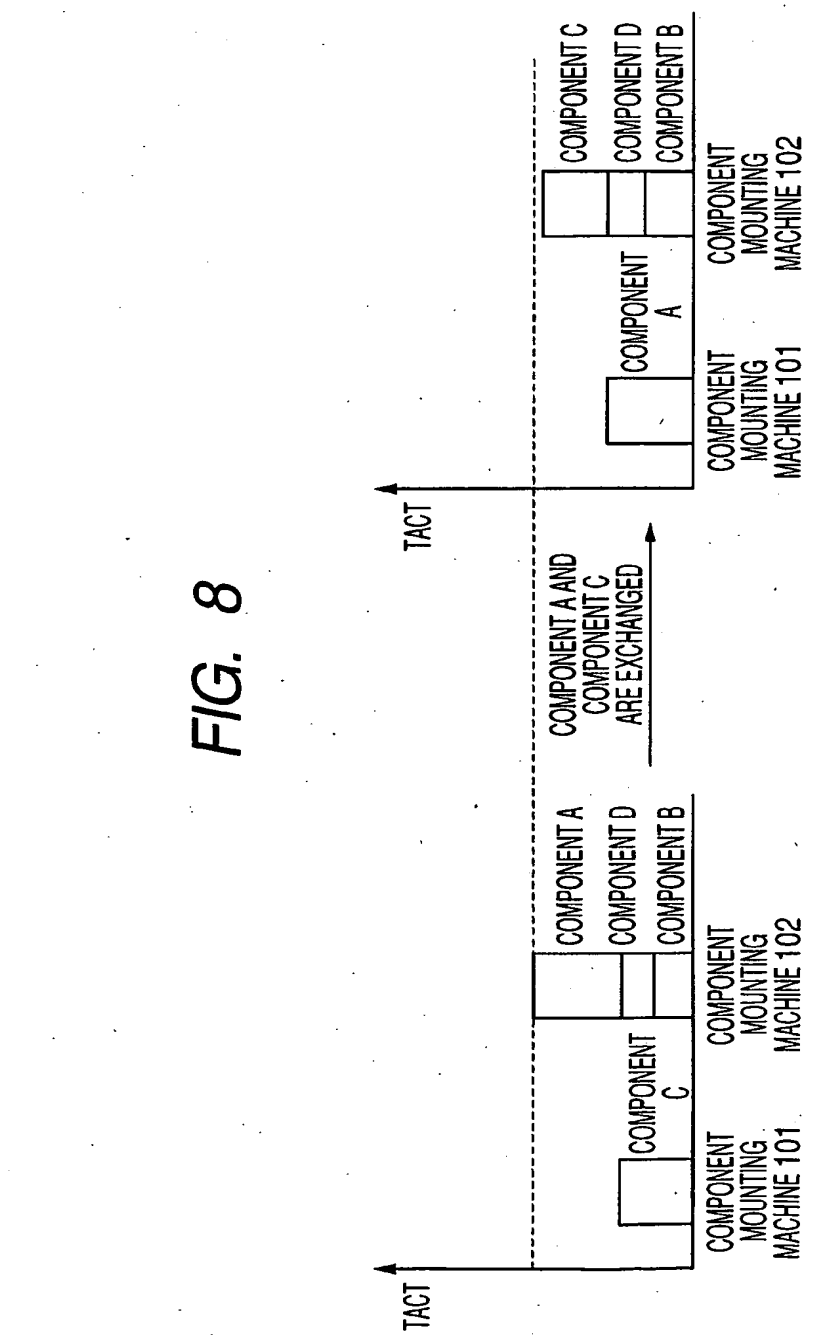

TACT
COMPONENT MOUNTING MACHINE 101
COMPONENT C
COMPONENT MOUNTING MACHINE 102
COMPONENT A
COMPONENT D
COMPONENT B
COMPONENT A AND COMPONENT C ARE EXCHANGED
TACT
COMPONENT MOUNTING MACHINE 101
COMPONENT A
COMPONENT MOUNTING MACHINE 102
COMPONENT C
COMPONENT D
COMPONENT B

FIG. 9

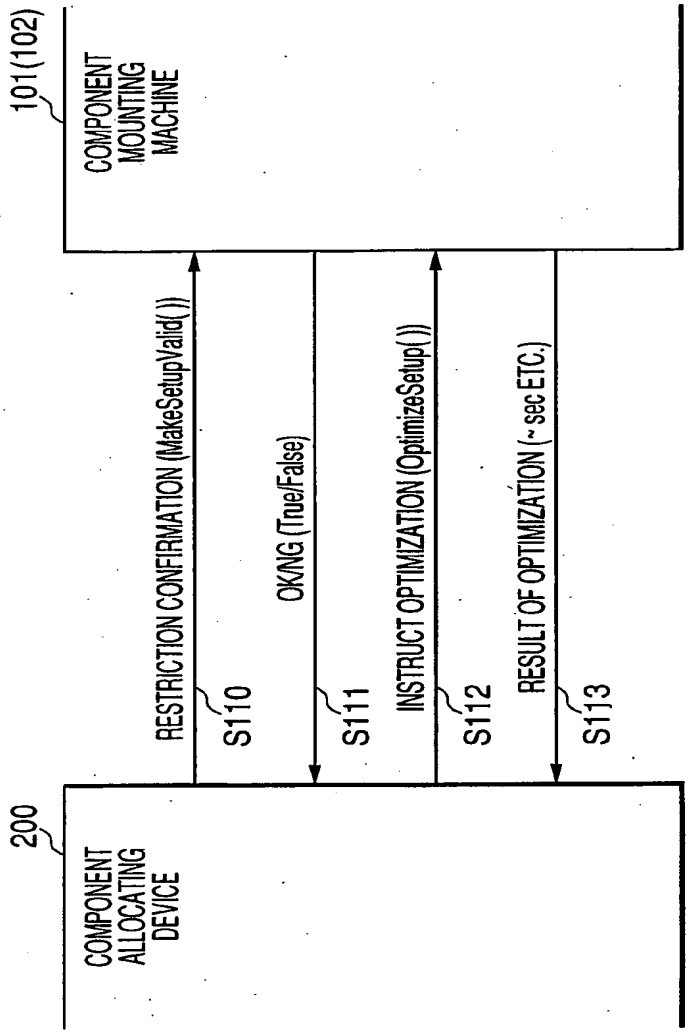

101(102)
COMPONENT MOUNTING MACHINE
200
COMPONENT ALLOCATING DEVICE
RESTRICTION CONFIRMATION (MakeSetupValid( ))
S110
OK/NG (True/False)
S111
INSTRUCT OPTIMIZATION (OptimizeSetup( ))
S112
RESULT OF OPTIMIZATION (~ sec ETC.)
S113

FIG. 10(b)

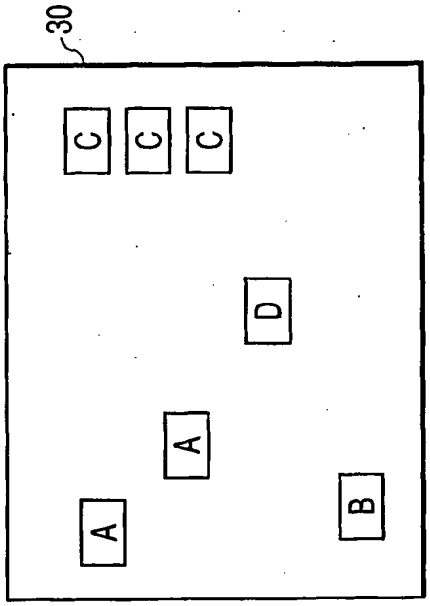


FIG. 10(c)

241

	COMPONENT A	COMPONENT B	COMPONENT C	COMPONENT D
COMPONENT MOUNTING MACHINE 101				
COMPONENT MOUNTING MACHINE 102				

FIG. 10(b)

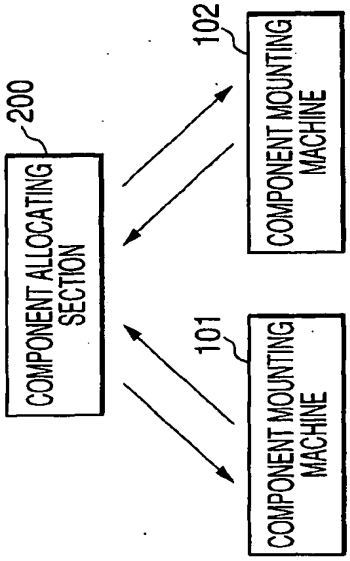


FIG. 11(a)

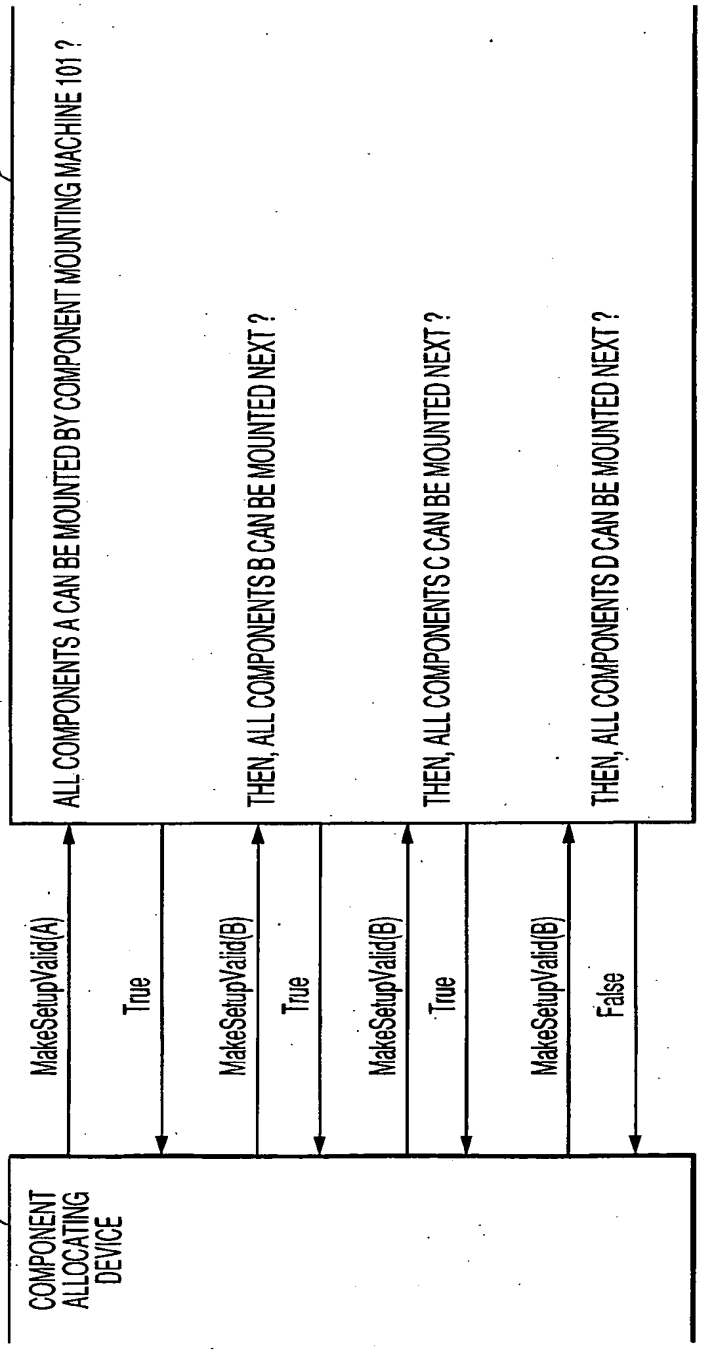


FIG. 11(b)

241

	COMPONENT A	COMPONENT B	COMPONENT C	COMPONENT D
COMPONENT MOUNTING MACHINE 101	T	T	T	F
COMPONENT MOUNTING MACHINE 102	F	T	T	T

FIG. 12(a)

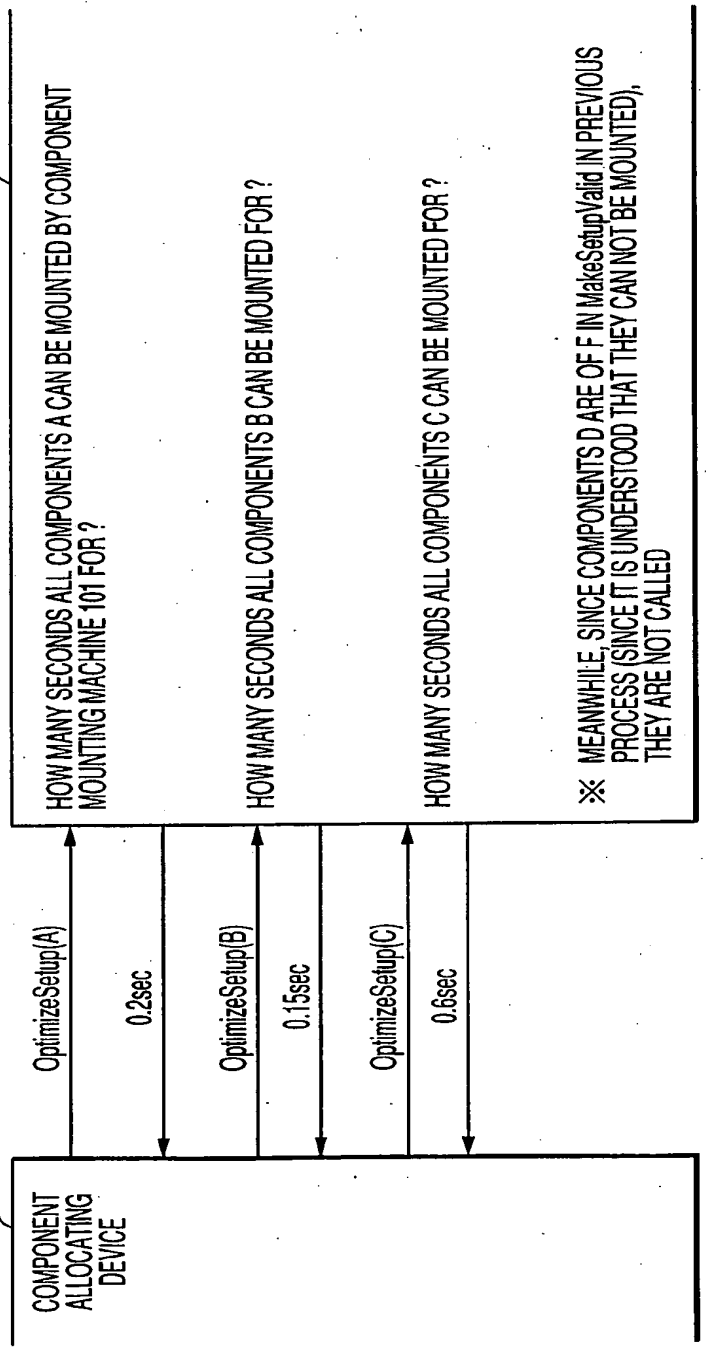


FIG. 12(b)

241

	COMPONENT A	COMPONENT B	COMPONENT C	COMPONENT D
COMPONENT MOUNTING MACHINE 101	0.2	0.15	0.6	F
COMPONENT MOUNTING MACHINE 102	F	0.15	0.75	0.3

FIG. 13(a)

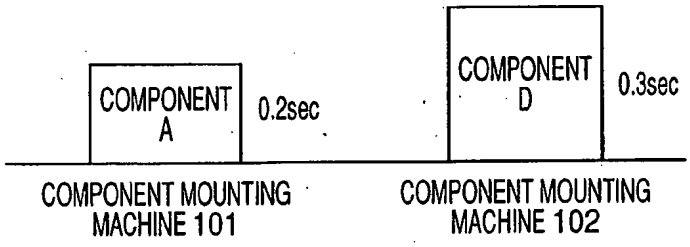


FIG. 13(b)

241

	COMPONENT A	COMPONENT B	COMPONENT C	COMPONENT D
COMPONENT MOUNTING MACHINE 101	0.2	0.15	0.6	F
COMPONENT MOUNTING MACHINE 102	F	0.15	0.75	0.3

FIG. 14(a)

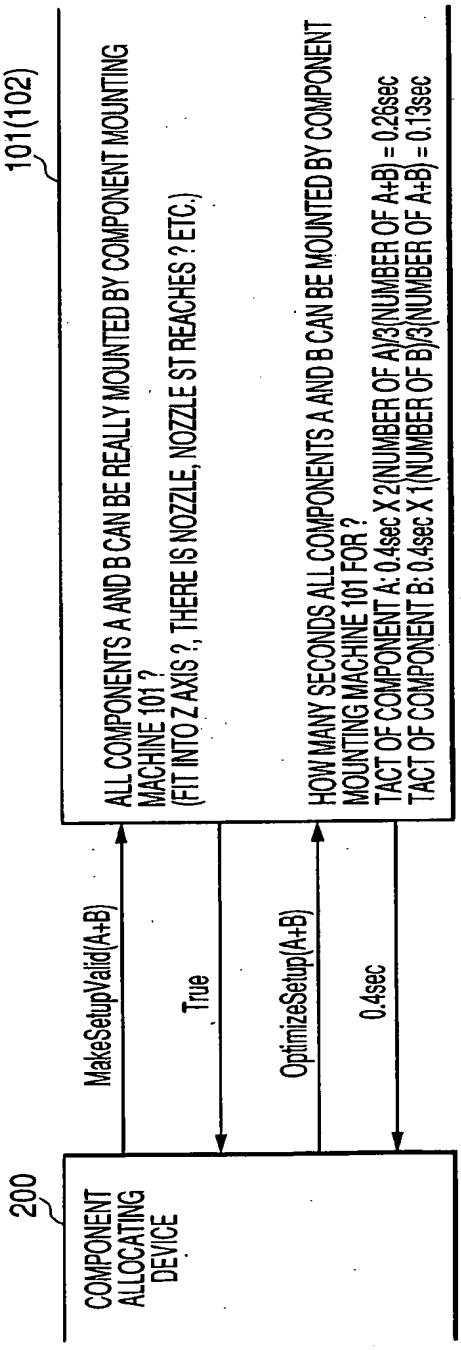


FIG. 14(b)

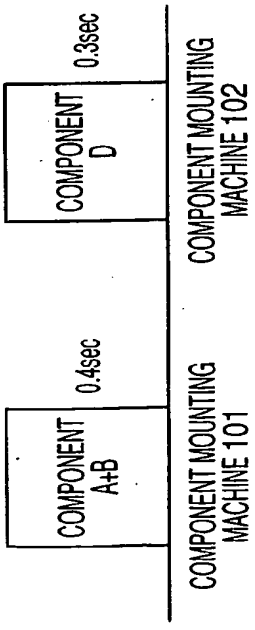


FIG. 14(c)

241

	COMPONENT A	COMPONENT B	COMPONENT C	COMPONENT D
COMPONENT MOUNTING MACHINE 101	0.26	0.13	0.6	F
COMPONENT MOUNTING MACHINE 102	F	0.15	0.75	0.3

FIG. 15(a)

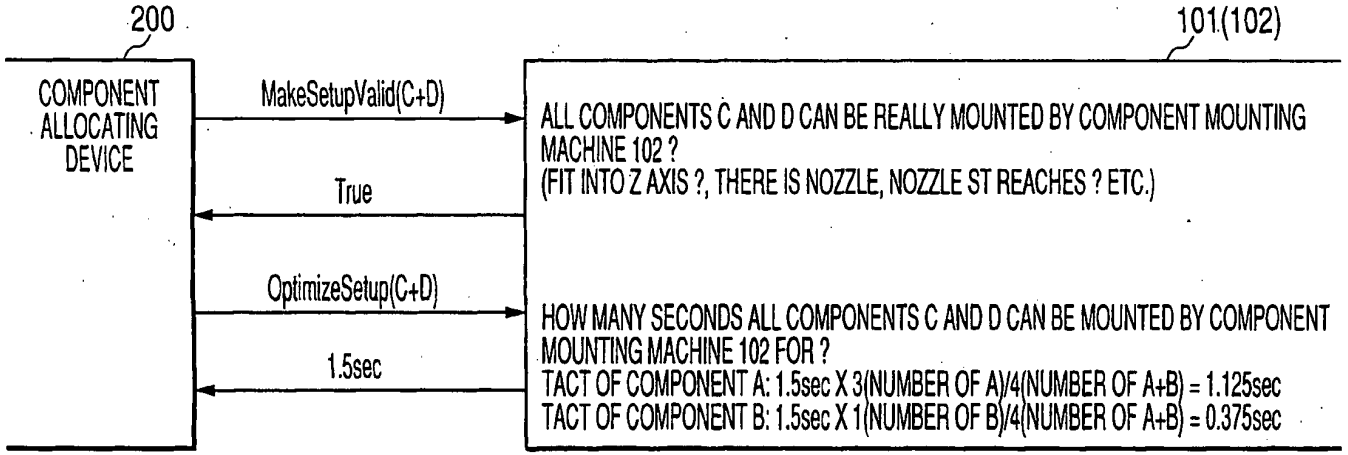


FIG. 15(b)

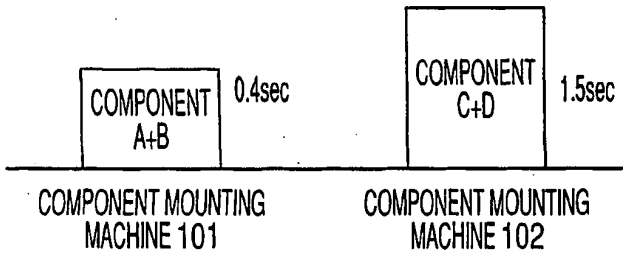


FIG. 15(c)

241

	COMPONENT A	COMPONENT B	COMPONENT C	COMPONENT D
COMPONENT MOUNTING MACHINE 101	0.26	0.13	0.6	F
COMPONENT MOUNTING MACHINE 102	F	0.15	1.125	0.375

FIG. 16(a)

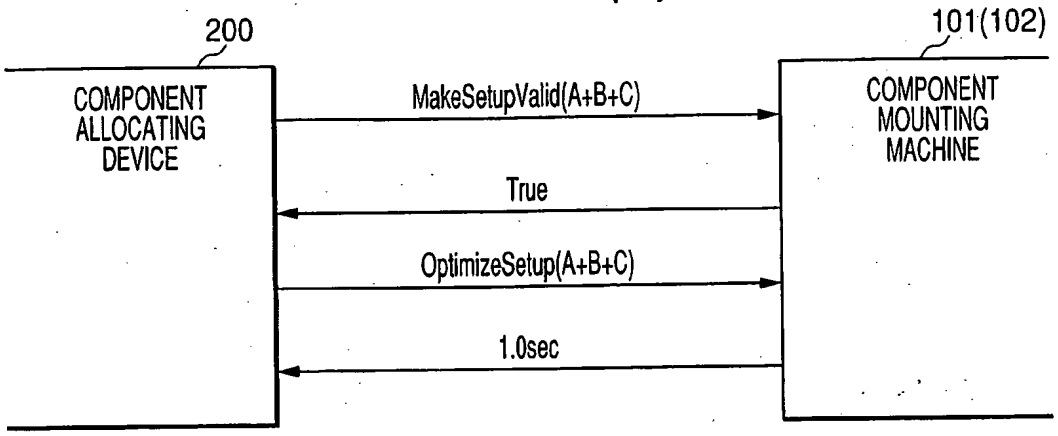


FIG. 16(b)

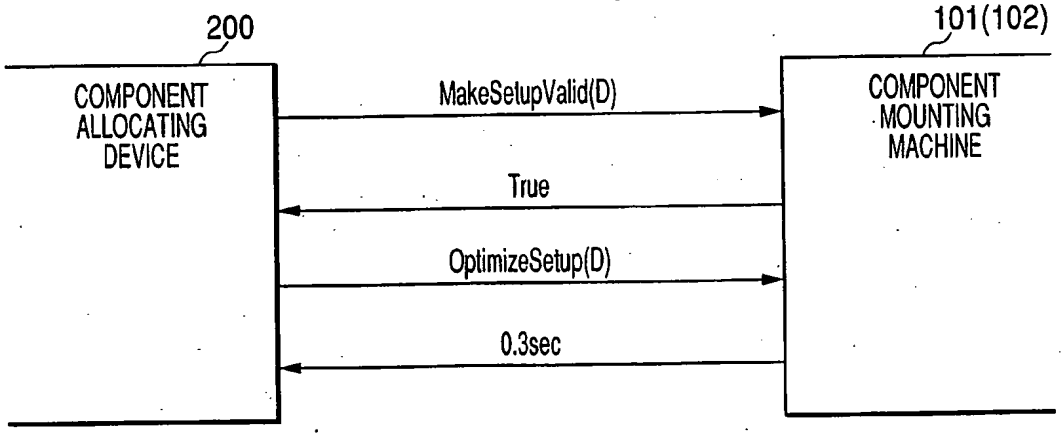


FIG. 16(c)

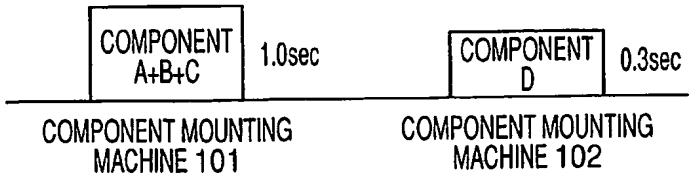


FIG. 17

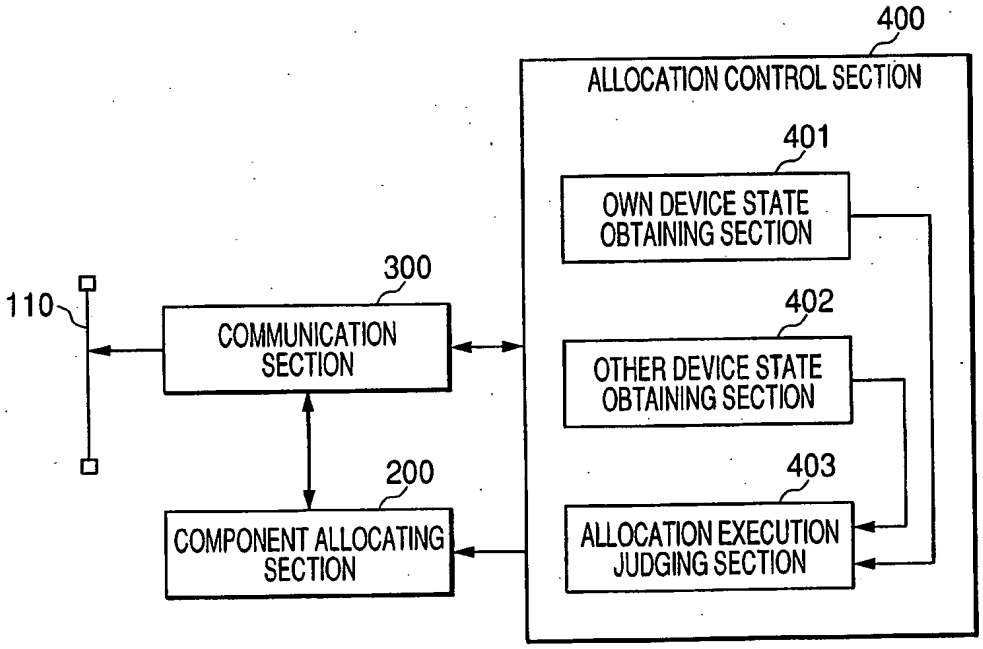

400
ALLOCATION CONTROL SECTION
401
OWN DEVICE STATE OBTAINING SECTION
402
OTHER DEVICE STATE OBTAINING SECTION
403
ALLOCATION EXECUTION JUDGING SECTION
300
COMMUNICATION SECTION
110
200
COMPONENT ALLOCATING SECTION

FIG. 18

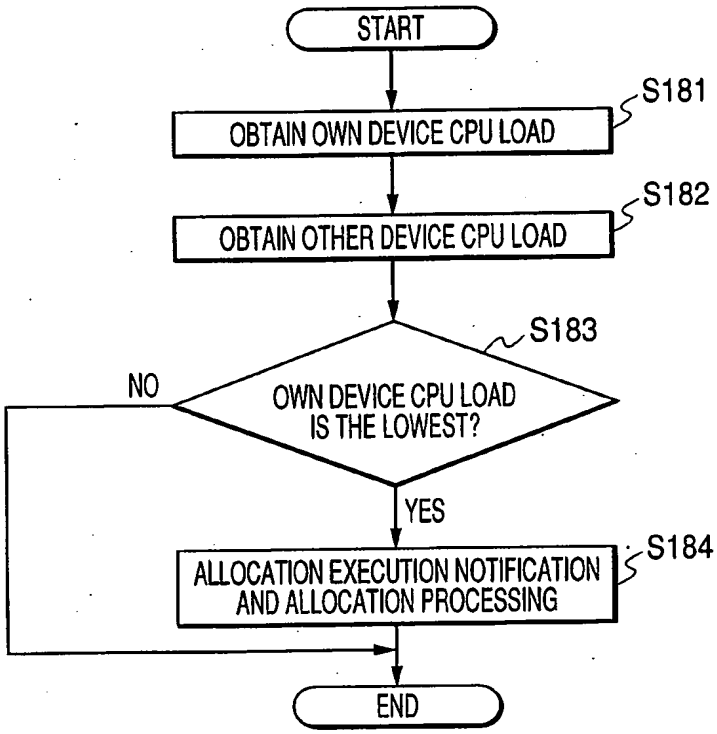

START
OBTAIN OWN DEVICE CPU LOAD
S181
OBTAIN OTHER DEVICE CPU LOAD
S182
OWN DEVICE CPU LOAD IS THE LOWEST?
S183
NO
YES
ALLOCATION EXECUTION NOTIFICATION AND ALLOCATION PROCESSING
S184
END

FIG. 19

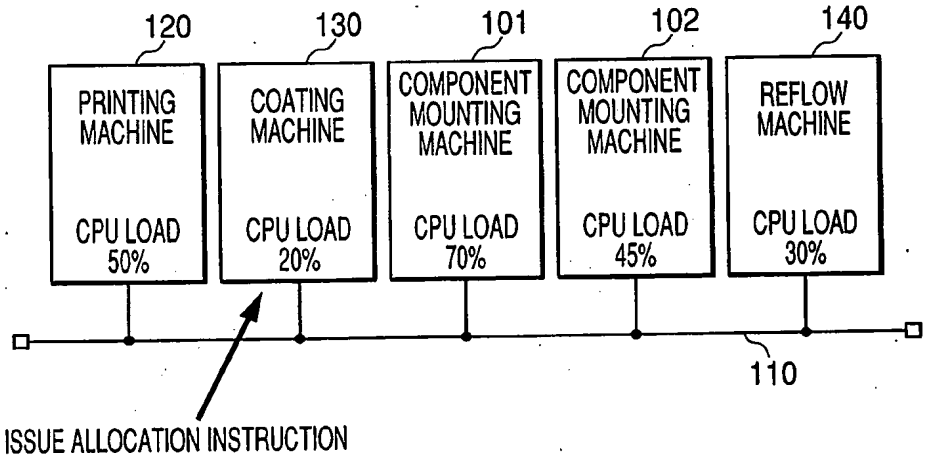

120
130
101
102
140
PRINTING MACHINE
CPU LOAD 50%
COATING MACHINE
CPU LOAD 20%
COMPONENT MOUNTING MACHINE
CPU LOAD 70%
COMPONENT MOUNTING MACHINE
CPU LOAD 45%
REFLOW MACHINE
CPU LOAD 30%
110
ISSUE ALLOCATION INSTRUCTION

FIG. 20

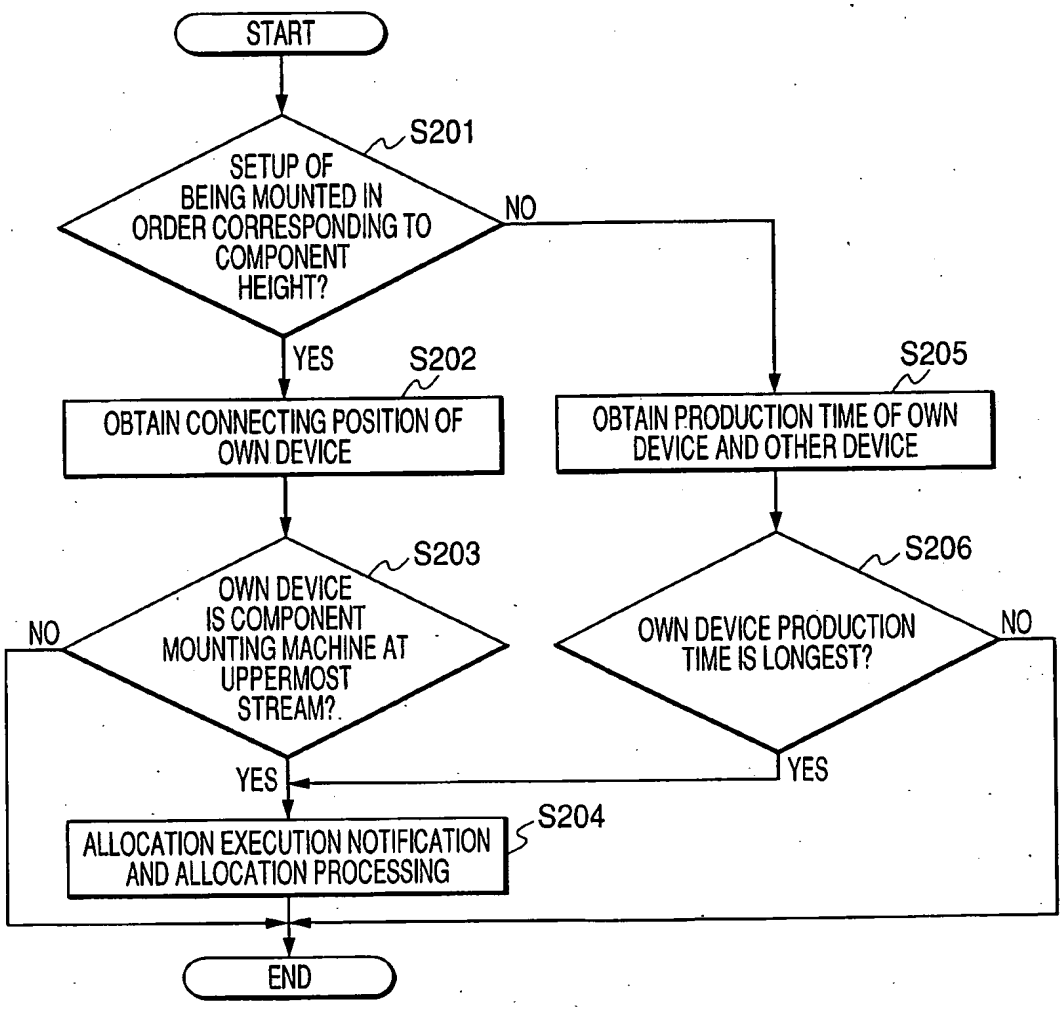

START
S201
SETUP OF BEING MOUNTED IN ORDER CORRESPONDING TO COMPONENT HEIGHT?
NO
YES
S202
OBTAIN CONNECTING POSITION OF OWN DEVICE
S205
OBTAIN PRODUCTION TIME OF OWN DEVICE AND OTHER DEVICE
S203
OWN DEVICE IS COMPONENT MOUNTING MACHINE AT UPPERMOST STREAM?
NO
S206
OWN DEVICE PRODUCTION TIME IS LONGEST?
NO
YES
YES
S204
ALLOCATION EXECUTION NOTIFICATION AND ALLOCATION PROCESSING
END

FIG. 21

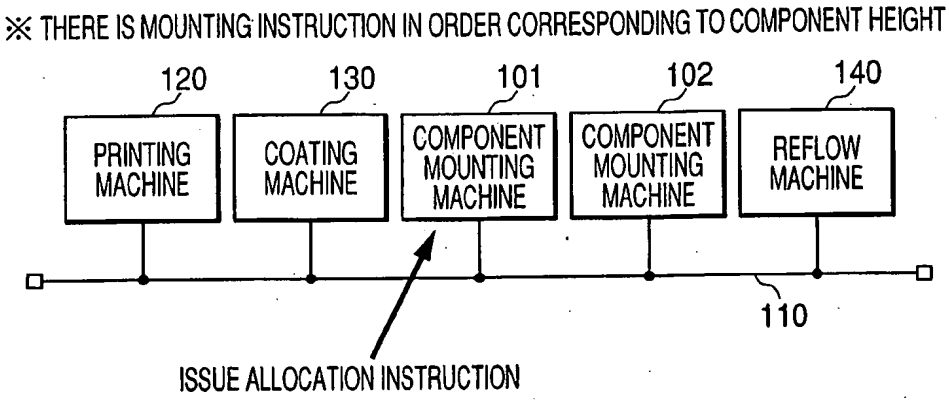

※ THERE IS MOUNTING INSTRUCTION IN ORDER CORRESPONDING TO COMPONENT HEIGHT
120
130
101
102
140
PRINTING MACHINE
COATING MACHINE
COMPONENT MOUNTING MACHINE
COMPONENT MOUNTING MACHINE
REFLOW MACHINE
110
ISSUE ALLOCATION INSTRUCTION

FIG. 22

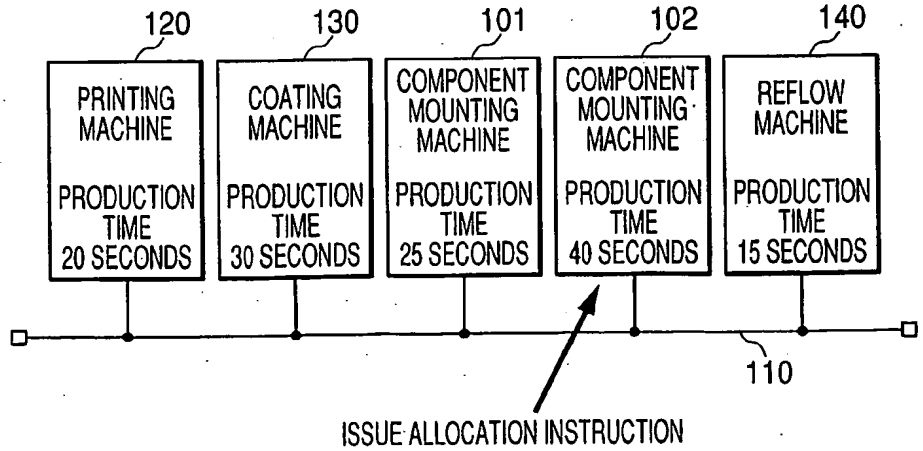

120
130
101
102
140
PRINTING MACHINE
PRODUCTION TIME 20 SECONDS
COATING MACHINE
PRODUCTION TIME 30 SECONDS
COMPONENT MOUNTING MACHINE
PRODUCTION TIME 25 SECONDS
COMPONENT MOUNTING MACHINE
PRODUCTION TIME 40 SECONDS
REFLOW MACHINE
PRODUCTION TIME 15 SECONDS
110
ISSUE ALLOCATION INSTRUCTION

FIG. 23

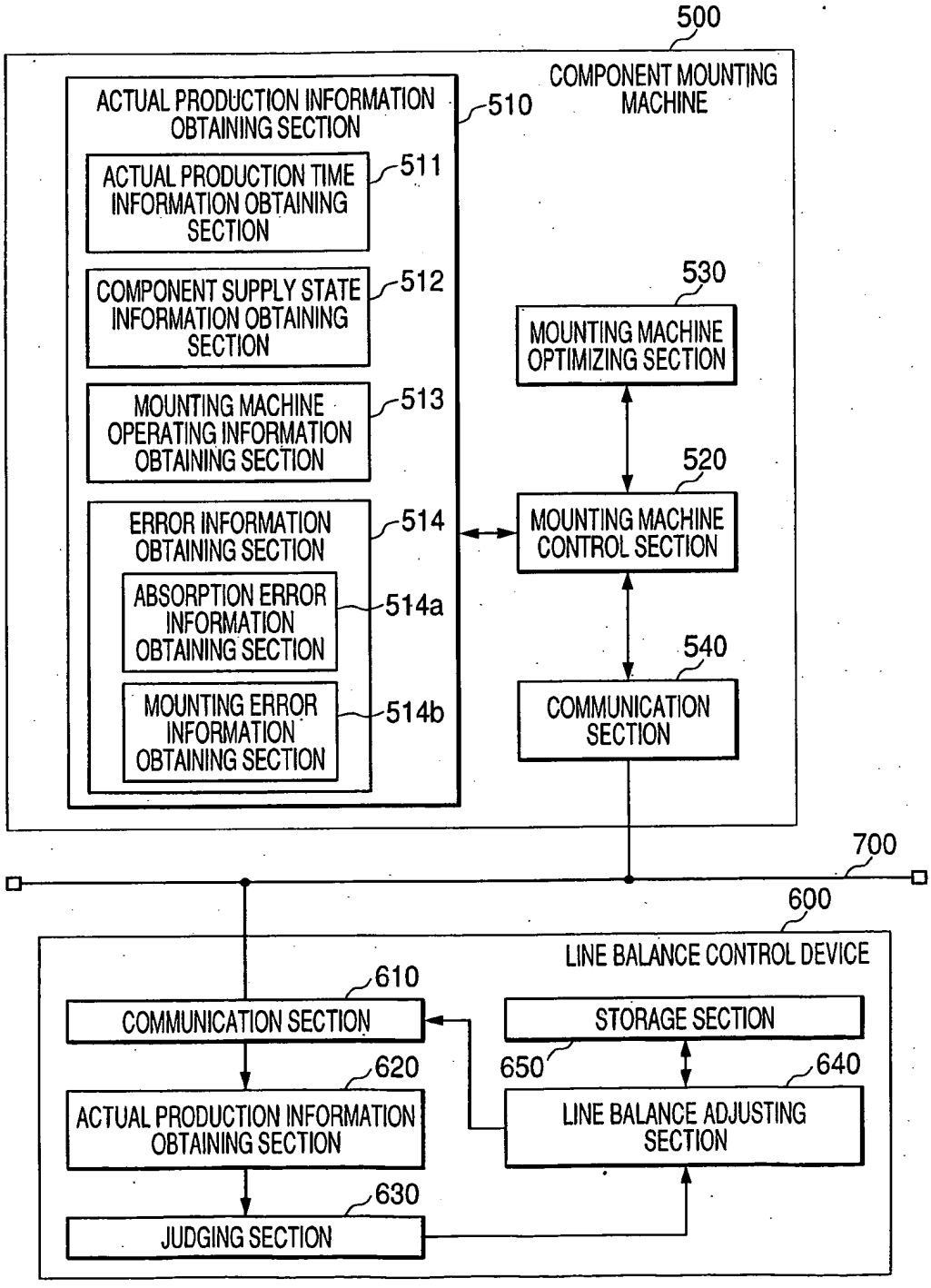

500
COMPONENT MOUNTING MACHINE
ACTUAL PRODUCTION INFORMATION OBTAINING SECTION
510
ACTUAL PRODUCTION TIME INFORMATION OBTAINING SECTION
511
COMPONENT SUPPLY STATE INFORMATION OBTAINING SECTION
512
MOUNTING MACHINE OPERATING INFORMATION OBTAINING SECTION
513
ERROR INFORMATION OBTAINING SECTION
514
ABSORPTION ERROR INFORMATION OBTAINING SECTION
514a
MOUNTING ERROR INFORMATION OBTAINING SECTION
514b
530
MOUNTING MACHINE OPTIMIZING SECTION
520
MOUNTING MACHINE CONTROL SECTION
540
COMMUNICATION SECTION
700
600
LINE BALANCE CONTROL DEVICE
610
COMMUNICATION SECTION
620
ACTUAL PRODUCTION INFORMATION OBTAINING SECTION
630
JUDGING SECTION
STORAGE SECTION
650
640
LINE BALANCE ADJUSTING SECTION

FIG. 24

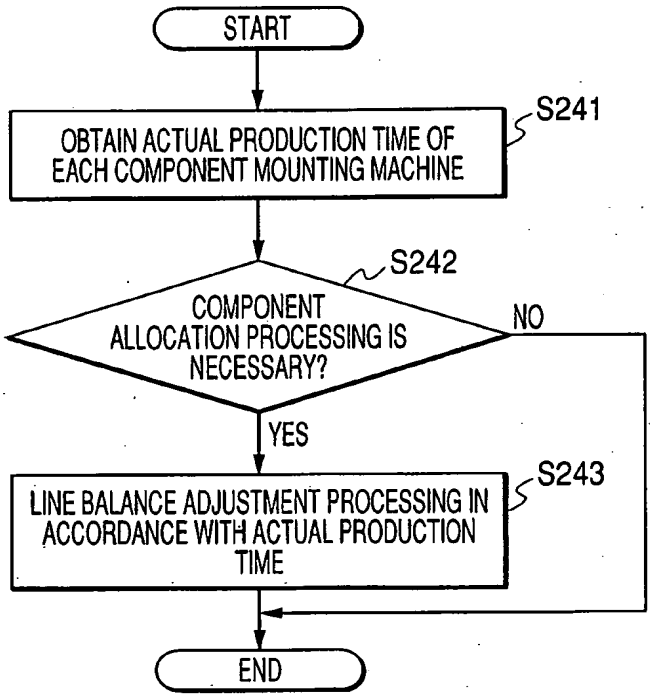

START
OBTAIN ACTUAL PRODUCTION TIME OF EACH COMPONENT MOUNTING MACHINE
S241
S242
COMPONENT ALLOCATION PROCESSING IS NECESSARY?
NO
YES
LINE BALANCE ADJUSTMENT PROCESSING IN ACCORDANCE WITH ACTUAL PRODUCTION TIME
S243
END

FIG. 25(a)

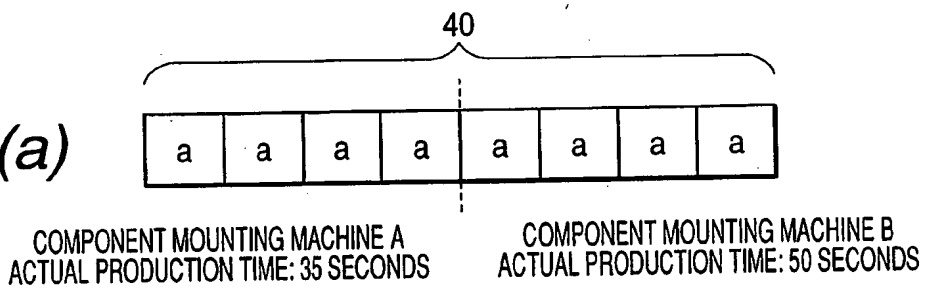


FIG. 25(b)

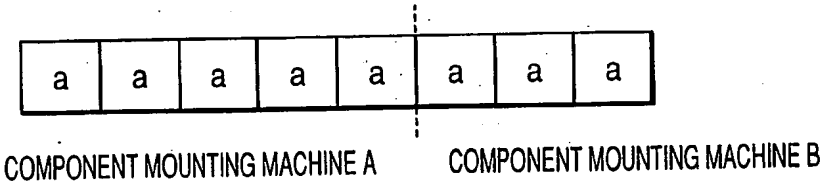


FIG. 26

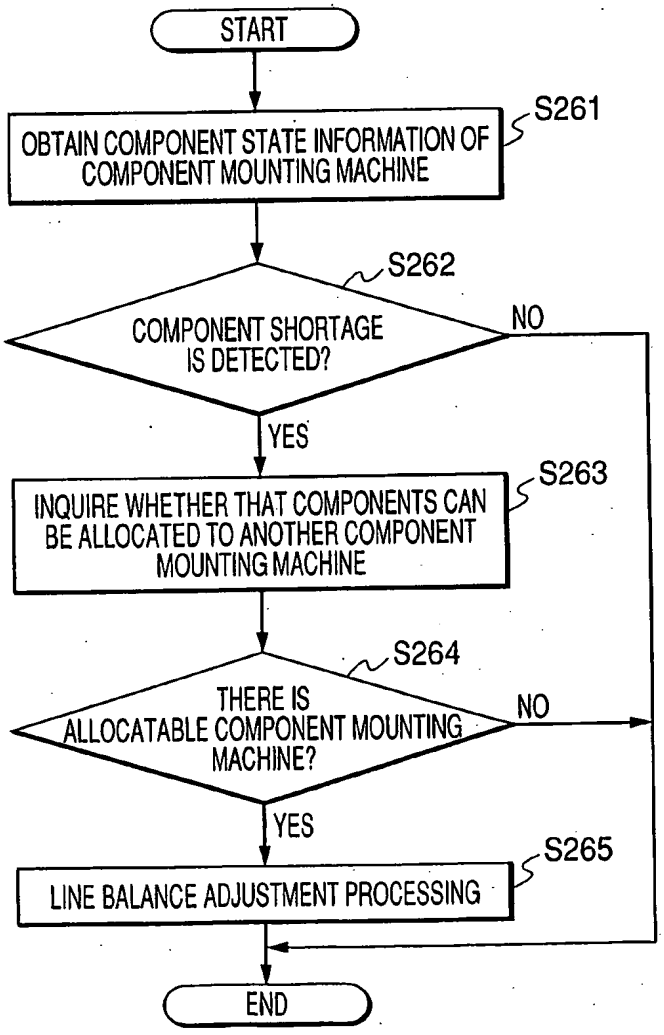

START
OBTAIN COMPONENT STATE INFORMATION OF COMPONENT MOUNTING MACHINE
S261
S262
COMPONENT SHORTAGE IS DETECTED?
NO
YES
INQUIRE WHETHER THAT COMPONENTS CAN BE ALLOCATED TO ANOTHER COMPONENT MOUNTING MACHINE
S263
S264
THERE IS ALLOCATABLE COMPONENT MOUNTING MACHINE?
NO
YES
S265
LINE BALANCE ADJUSTMENT PROCESSING
END

FIG. 27(a)

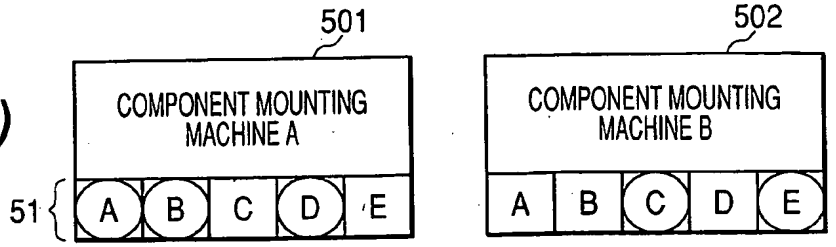


FIG. 27(b)

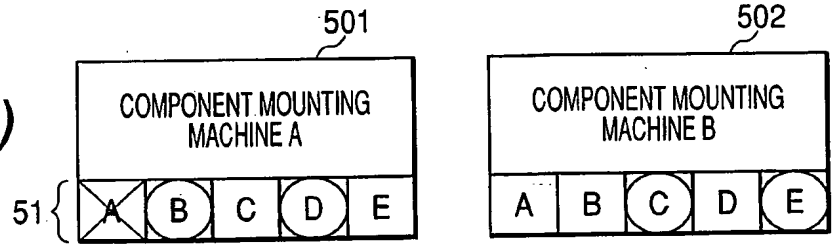


FIG. 27(c)

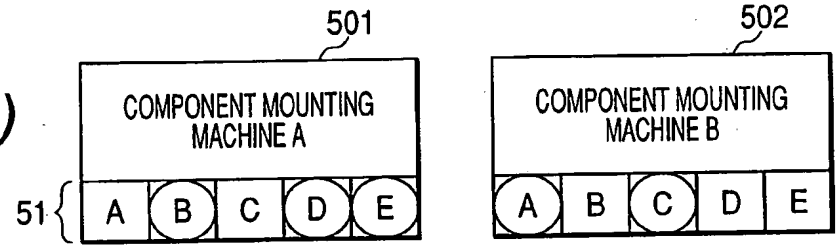


FIG. 28(a)

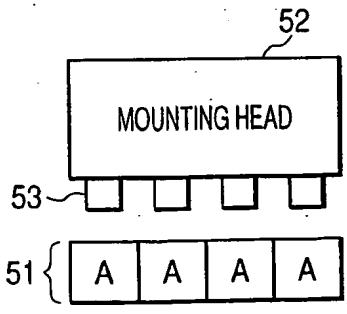


FIG. 28(b)

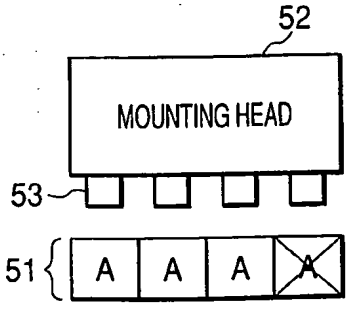


FIG. 29

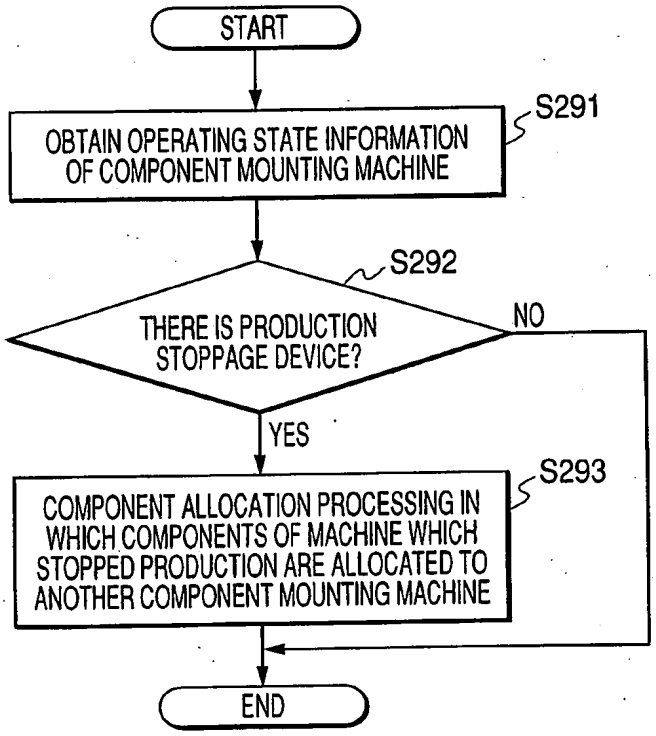
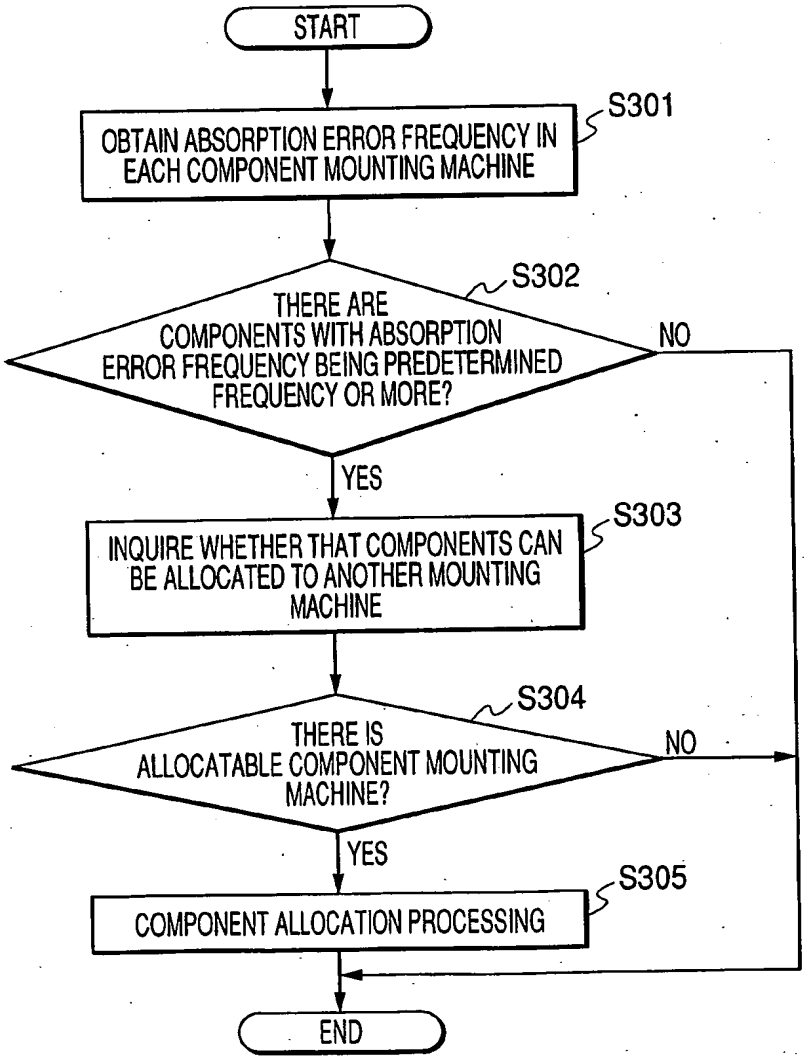

START
OBTAIN OPERATING STATE INFORMATION OF COMPONENT MOUNTING MACHINE
S291
S292
THERE IS PRODUCTION STOPPAGE DEVICE?
NO
YES
COMPONENT ALLOCATION PROCESSING IN WHICH COMPONENTS OF MACHINE WHICH STOPPED PRODUCTION ARE ALLOCATED TO ANOTHER COMPONENT MOUNTING MACHINE
S293
END

FIG. 30


START
OBTAIN ABSORPTION ERROR FREQUENCY IN EACH COMPONENT MOUNTING MACHINE
S301
THERE ARE COMPONENTS WITH ABSORPTION ERROR FREQUENCY BEING PREDETERMINED FREQUENCY OR MORE?
S302
NO
YES
INQUIRE WHETHER THAT COMPONENTS CAN BE ALLOCATED TO ANOTHER MOUNTING MACHINE
S303
THERE IS ALLOCATABLE COMPONENT MOUNTING MACHINE?
S304
NO
YES
COMPONENT ALLOCATION PROCESSING
S305
END